

(12) **UK Patent Application** (19) **GB** (11) **2 256 425** (13) **A**  
 (43) Date of A publication 09.12.1992

(21) Application No 9127257.5

(22) Date of filing 23.12.1991

(30) Priority data  
 (31) 9105262 (32) 13.03.1991 (33) GB

(71) Applicant  
**Taylowe Limited**

(Incorporated in the United Kingdom)

Malvern Road, Furze Platt, Maidenhead, Berks,  
 SL6 7RF, United Kingdom

(72) inventor  
**Dennis Tierney**

(74) Agent and/or Address for Service  
**Withers & Rogers**  
 4 Dyer's Buildings, Holborn, London, EC1N 2JT,  
 United Kingdom

(51) INT CL<sup>s</sup>  
**B65D 5/02 5/66 // B65D 85/10**

(52) UK CL (Edition K)  
**B8P PK3**  
**U1S S1114**

(56) Documents cited  
**GB 1277653 A** **GB 1023071 A** **GB 0980885 A**  
**GB 0447156 A** **GB 0289127 A** **EP 0318750 A1**

(58) Field of search  
 UK CL (Edition K) B8P PB1 PC1C PC1X PK3 PL4  
 INT CL<sup>s</sup> B65D 5/02 5/66 85/10

(54) A carton formed from a blank

(57) A flip top carton is formed from a single blank and has a tuck-in end which comprises a main flap 22 and at least one side flap 24, 25. The main flap 22 is connected to the remainder of the carton through a hinge line 23 and includes a line of weakness 104 dividing the main flap 22 into a tuck-in tongue 103 and a main part 102. The or each side flap 24, 25 is arranged to engage a portion of the main flap 22 which is spaced from the hinge line 23 when the tuck-in end of the carton is closed to inhibit the or each said portion from moving towards the hinge line 23. As shown, a bulged part 101 of each side flap engages behind a shoulder part formed by a slit 105 at each end of the line of weakness 104 which is a curved fold line. The carton includes an integral insert 12 connected to the lower edge of the front panel 14.

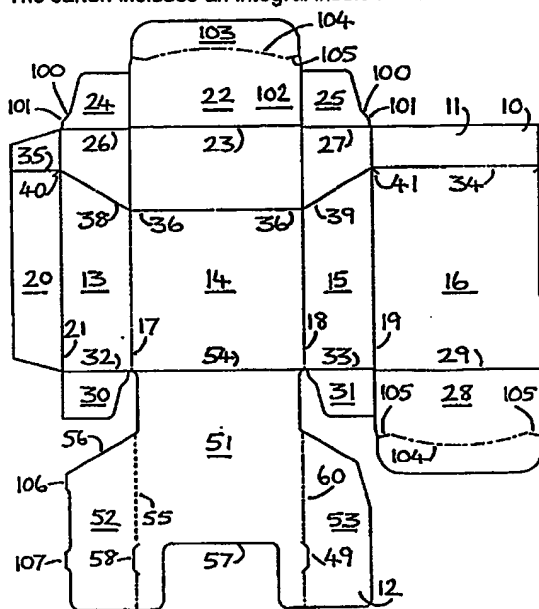


FIG 4.

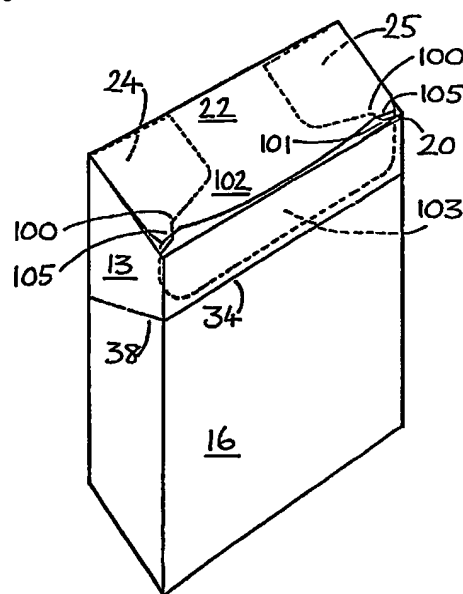


FIG 5.

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

GB 2 256 425 A

1/4

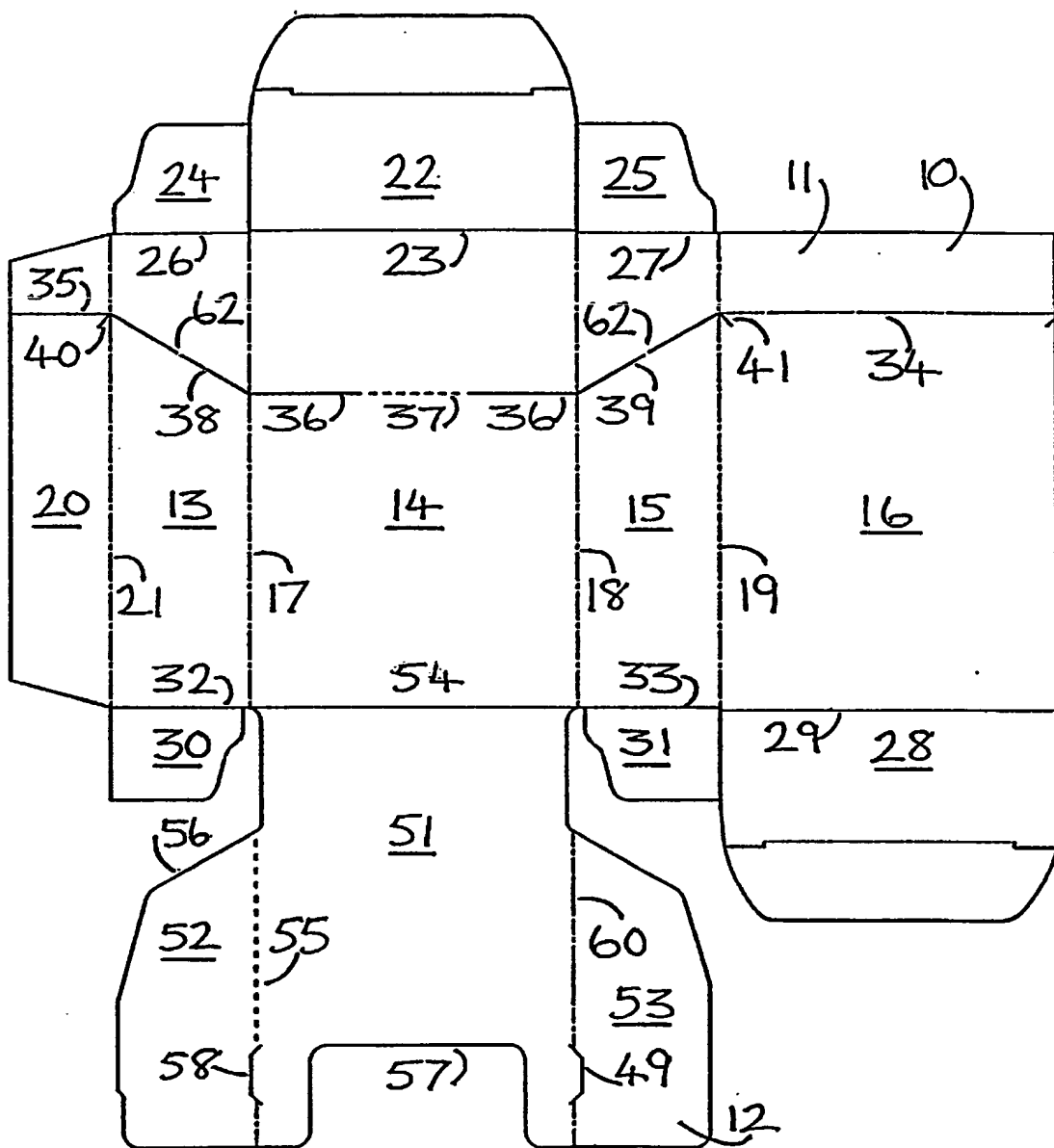
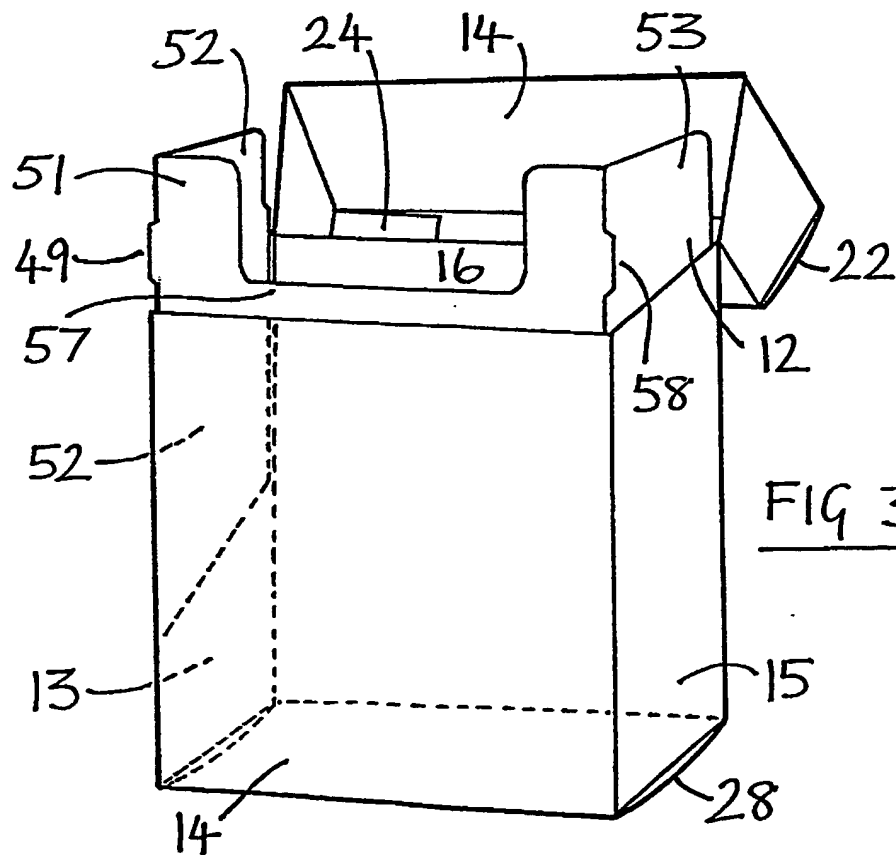
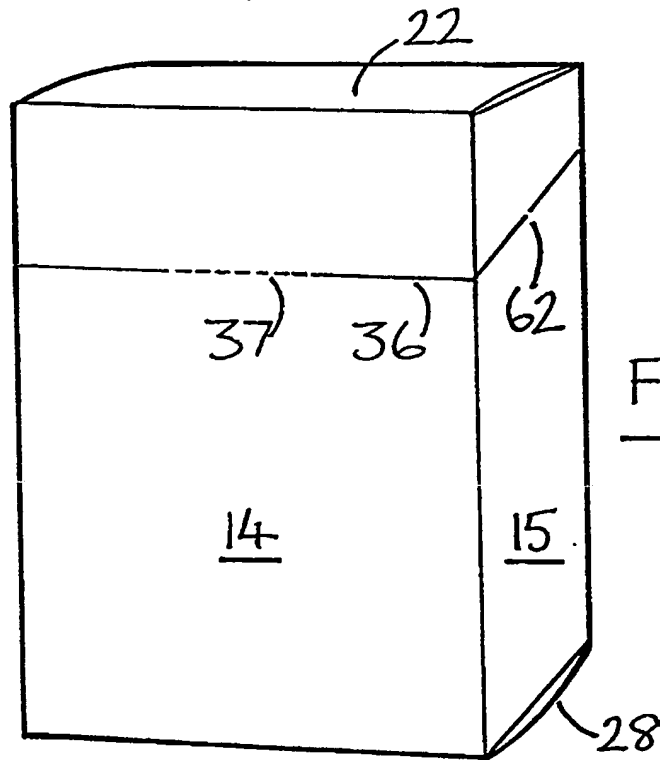


FIG. 1.

2/4



3/4

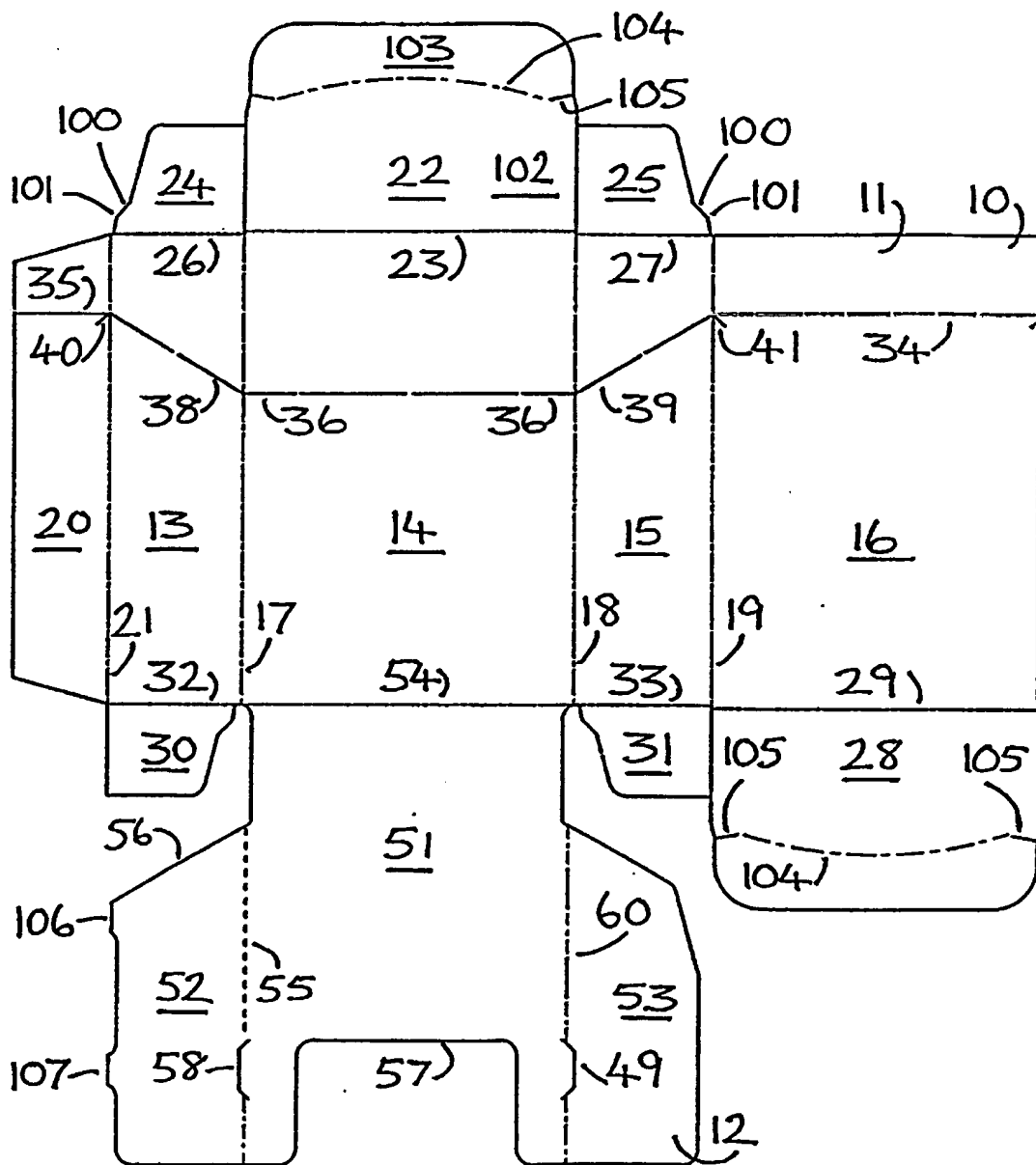


FIG 4.

4/4

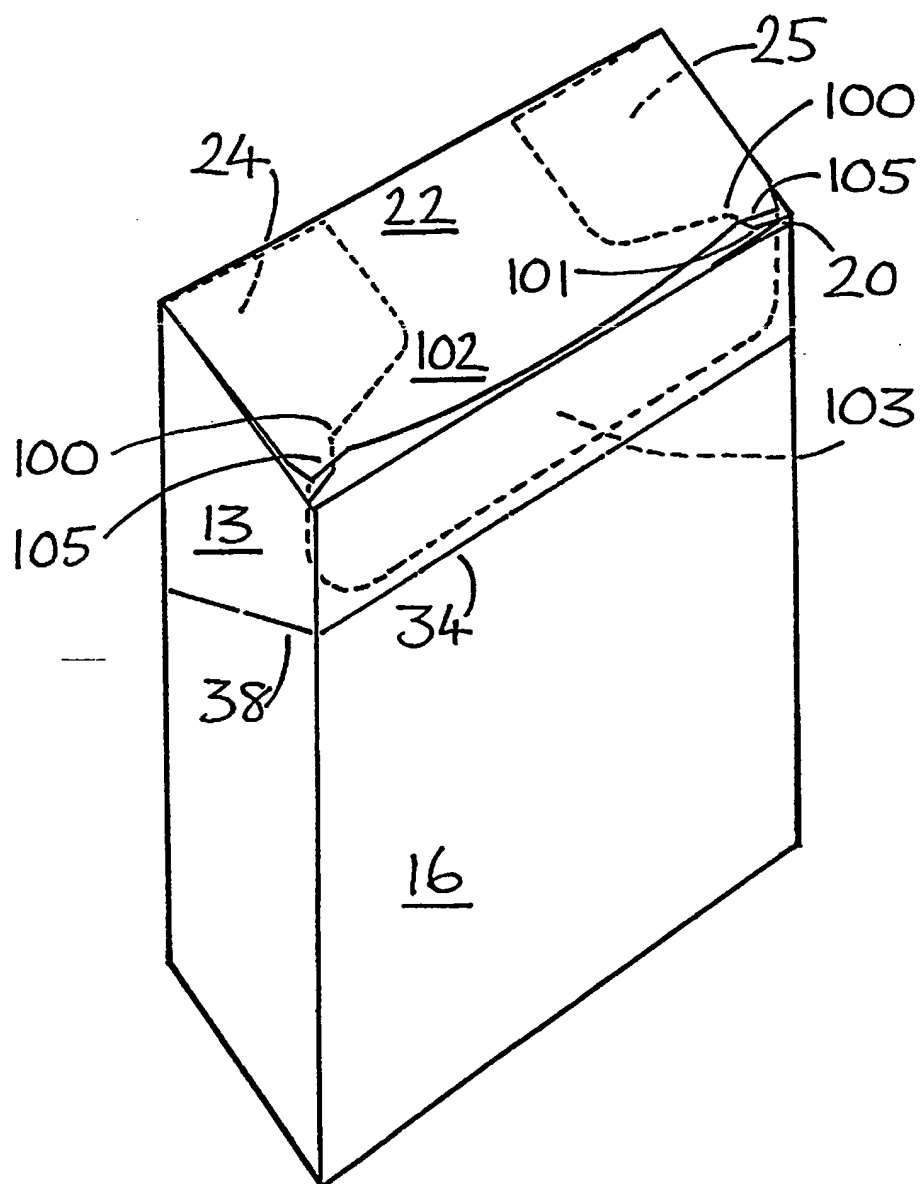


FIG 5.

A CARTON AND A BLANK FOR FORMING THE SAME

The invention relates to a carton and a blank for forming the same.

Cartons are known which have a tuck-in end. In a rectangular carton, the tuck-in end will comprise a main flap and two smaller opposed side flaps. The main flap will include a line of weakness dividing the main flap into a tuck-in tongue and a main part. To close the carton, the side flaps are folded inwards and the main flap is then folded over them with the tuck-in tongue thereof being inserted into the end of the carton. The main part of the main flap is often bowed so that it is difficult to stand the carton on the closed end.

According to one aspect of the invention there is provided a carton having a tuck-in end comprising a main flap and at least one side flap, the main flap being connected to the remainder of the carton through a hinge line and including a line of weakness dividing the main flap into a tuck-in tongue and a main part, the or each side flap being arranged to engage a portion of the main flap which is spaced from the hinge line when the tuck-in end of the carton is closed, to inhibit the or each said portion from moving towards the hinge line.

An engagement between the main flap and the side flaps thus inhibits bowing of the main part to enable the carton to stand on the main part.

Preferably, the or each side flap urges the or each said portion away from the hinge line. In this way the engagement acts to positively flatten the main part.

Preferably, the or each portion is in the region of the end of the line of weakness in the main flap.

Preferably, the tongue includes a shoulder part at or adjacent one or both ends of the line of weakness. The shoulder part may lie parallel to the longitudinal axis of the line of weakness but preferably it lies at an obtuse angle to the longitudinal axis of the line of weakness. The angle is preferably more than  $135^{\circ}$  and may be more than  $150^{\circ}$ .

Preferable, there is a slit from one or each end of the line of weakness to the periphery of the main flap. The slit preferably forms the shoulder part.

An edge of the or each side flap may be arranged to engage the or each portion. The edge of the or each side flap is preferably angled away from the line of weakness. The edge of the or each side flap may include a bulged portion which is arranged to lie behind the shoulder part

when the carton is closed.

The line of weakness may be a fold line and preferably is a curved fold line. The curving of the fold line also has the effect of flattening the main part.

According to another aspect of the invention there is provided a carton including a first flap or panel which is connected through a fold line to a second flap or panel, the fold line being curved.

Preferably, the second flap or panel is intended to be flat in the erect carton.

The second flap or panel preferably forms the base of the carton. The second flap or panel therefore provides a flat base.

The second flap or panel may be an end closure flap or panel and preferably is a main part of a main flap of a tuck-in closure, the main part being connected through a line of weakness to a tuck-in tongue of the main flap. Preferably, the said line of weakness constitutes the said curved fold line. The carton may be a flip top carton preferably as formed from a single blank.

Flip top cartons are commonly used as packaging for



cigarettes. Known cartons comprise two parts, one part being the carton box and the other part being an insert. The carton box is hinged at the back face and slit around the sides and front so that the entire top of the carton box can be flipped back. On the sides of the carton box the slits are angled downwardly from the hinge. The insert is glued into the carton box and protrudes out of the carton box when the top is flipped back. The insert acts to retain the top when it is closed and is deformed when the top of the carton box is flipped open.

The fact that known flip top cartons must be made in two parts which are glued together may undesirably complicate manufacture and expensive dedicated capital equipment has previously been required,

According to a further aspect of the invention there is provided a flip top carton formed from a single blank.

As the carton is formed from a single blank according to the invention, manufacture and erection can be simplified.

The blank preferably comprises a plurality of carton panels and an insert connected thereto through a fold line. The insert may be connected to the carton panels at any suitable position. The insert may be connected to

the carton panels through a fold line on the front of the carton and preferably is connected to the carton panels through a fold line at the base of the front of the carton. In this way, folding of the insert about the connection fold line brings the insert to lie behind the front panel of the carton box and so as to protrude beyond the opening slit. In another embodiment, the insert may be connected to the carton panels through a vertical fold line.

Preferably the insert is frictionally retained in position in the erect carton.

Preferably, the insert comprises a front panel and two side panels. The insert in known flip top cigarette cartons is normally in this form. The side panels of the insert may be wider than the side panels of the carton panels so that the side panels of the insert can be frictionally retained. Each side panel may include at least one projection, the or each side being wider than the corresponding panel of the carton panels at the position of the or each projection. Preferably the projections are provided on one or each side panel at positions in the region of either end of the side panel. Alternatively, the side panels of the insert may be arranged to be glued to the side panels of the carton panels.

In known cigarette flip top cartons, the edges of the opening slit in the carton are aligned by opposite edges of the carton blank. Preferably, according to the invention, the opening slit is defined as a cut in the blank. In this way, an edge of the carton blank is freed and the insert can be formed at that edge. Preferably the cut lies entirely in the body of the blank. Conveniently, the front wall panels and side wall panels of the carton panels are formed in a line. In this way the cut in the blank which is the opening slit in the erected carton can be readily formed in the adjacent panels.

Preferably, the carton blank is arranged to be formed into a flat sleeve prior to full erection. The insert may be folded within the sleeve. The blank can thus be supplied from a manufacturer to a customer for ready erection and filling. The insert may include an inner fold line which is folded when the carton blank is in the form of a flat sleeve. The inner fold line is preferably weakened and may include a plurality of perforations. In this way the inner fold line does not resist folding of the blank into a sleeve. The inner fold line may be between a front panel and a side panel of the insert.

Where the carton blank is arranged to be formed into a

flat sleeve, the ends of the carton may be closed off by any suitable closure such as a skillet closure. The closure may use flaps from fewer than all of the sleeve edges and may be closed by tuck-in closures.

According to another aspect of the invention there is provided a blank for forming a flip top carton according to any aspect of the invention and including any or none of the sub-features mentioned in relation thereto.

Two embodiments of the invention will now be described by way of example and with reference to the accompanying drawing, in which:

Fig. 1 is a plan view of the carton blank of the first embodiment;

Fig. 2 is a perspective view of the erect carton of Fig. 1 prior to opening; and

Fig. 3 is a perspective view of the erect carton of Fig. 1 with the top flipped open.

Fig. 4 is a plan view of the carton blank of the second embodiment, and

Fig. 5 is a detail top perspective view of the erect carton of Fig. 4.

The flip top carton 10 of the first embodiment comprises a plurality of carton panels forming the carton box 11

and a plurality of insert panels forming the insert 12. The carton panels 11 include four rectangular wall panels 13, 14, 15, 16 which are serially connected through parallel fold lines 17, 18, 19. The wall panels 13, 14, 15, 16 are alternately narrow and broad, broad panel 14 forming the front wall panel and broad panel 16 forming the rear wall panel with narrow panels 13 and 15 forming the side wall panels. A glue flap 20 is connected to narrow side wall panel 13 through a fold line 21 which is parallel to the fold line 17. A tuck-in flap 22 is connected to the top edge of the front wall panel 14 through a fold line 23 and forms a tuck-in closure with side flaps 24 and 25 which are connected to side panels 13 and 15 respectively through fold lines 26 and 27. A tuck-in panel 28 is connected to the lower edge of rear wall panel 16 through a fold line 29. The lower tuck-in panel 28 forms a tuck-in closure with side flaps 30 and 31 which are connected to side wall panels 13 and 15 respectively through fold lines 32 and 33.

Rear wall panel 16 includes a crease line 34 adjacent its top edge and parallel thereto. A fold line 35 is provided in the glue flap 20 co-linearly with the crease line 34. The front wall panel 14 includes a cut line 36 with a central portion of perforations 37. The cut line 36 is parallel to the crease line 34 and fold line 35 but is located further from the top of the wall panels 13,

14, 15, 16. Angled cut lines 38 and 39 traverse side wall panels 13 and 15 respectively such that cut line 38 connects cut line 36 to fold line 35, and cut line 39 connects the crease line 34 to the cut line 36. Each cut line 38, 39 is bisected by a severable connection 62. Adjacent the end of the cut line 38 at the fold line 21 is provided a short cut 40 which is angled downwardly in the glue flap 20. Similarly, a short cut 41 is angled downwardly in the rear wall panel 16 from the end of the cut line 39.

The insert 12 consists of three panels 51, 52 and 53. The insert front panel 51 is connected to the bottom edge of the carton front wall panel 14 through a fold line 54. The height of the insert front panel 51 is slightly less than the height of the carton front panel 14. The insert front panel 51 includes a rectangular cut-out 57 at its outermost end. The first insert side panel 52 is connected to the insert front panel 51 through a fold line 55 which is co-linear with the fold line 17 and this panel 52 constitutes the aforesaid "inner side panel". The first insert side panel 52 extends from adjacent the distal end of the insert front panel 51 to a position spaced from the end of the lower side flap 30 and the edge 56 of the first insert side panel 52 which is adjacent the lower side flap 30 extends at an angle to the fold line 55 such that when the insert 12 is folded

about the fold line 54 the edge 56 is parallel with the cut line 38 in the side panel 13. The fold line 55 consists of perforations to a position adjacent the inner edge of the rectangular cut-out 57. There a cut 58 is provided which extends across from the insert front panel 51 to the first insert side panel 52 and then runs parallel to the fold line 55 before crossing back over that line. The cut thereby defines a tab 49. The second insert side panel 53 is a mirror image of the shape of the first insert side panel 52, the only difference being that the line of small perforations on the fold line 55 is replaced by a line of longer cuts 60. The width of the insert side panels 52, 53 is slightly greater than the width of the carton side wall panels 13, 15.

In order to form the carton from the blank of Fig. 1, the insert 12 is folded about the fold line 54 onto the front wall panel 14 and may be secured by gluing. The side wall 13 together with the first insert side panel 52 are then folded about the fold lines 17, 55. The line of perforations on the fold line 55 provide the line with a low resistance to folding such that two panels 13, 52 can be readily folded in spite of there being two layers of card. The rear wall panel 16 is then folded about the fold line 19 to overlie and be glued to glue flap 20. The carton 10 is then in a sleeve form in which it can be supplied from a manufacturer to a customer. To erect the

carton 10, inwards pressure is applied to the fold lines 17 and 19 and the upper tuck-in panel 22 and side flaps 24 and 25 are closed at the top of the carton and the lower tuck-in panel 28 with the side flaps 30 and 31 are closed at the bottom of the carton 10. The carton is then in the form as shown in Fig. 2. The top of the carton can then be flipped back about the crease line 34, in the process of which, the connections separating the perforations 37 are severed together with the connections 62 bisecting the cut lines 38, 39. The carton 10 is then as shown in Fig. 3 where the insert 12 can be seen protruding from the opening formed in the carton 11. The width of the insert side panel 52 frictionally retains it against the slightly narrower side wall panel 13 of the carton 11 and holds the insert in position. The rectangular cut-out 57 is entirely exposed when the carton is open and enables access to the interior of the carton while the upstanding walls defined by the distal end of the insert are engageable with the top of the carton to retain the top of the carton when closed position and to resist by deformation opening of the top of the carton. The cuts 58 on the fold lines 55, 60 define projecting tabs 49 in the erected carton which engage the side walls of the top of the carton to further assist in retaining the carton top in the closed position.



As can be seen, the carton 10 of the embodiment can be rapidly and easily erected from the blank. No gluing steps are necessary except for the step of forming the carton into a sleeve and a separate insert part is not required.

The second embodiment is a flip top carton similar to the first and the same reference numerals will be used for equivalent features. Only the differences between the two embodiments will be described.

The side flaps 24, 25 along their edges away from the main tuck-in flap 22 are angled inwards at a steeper angle than in the first embodiment and include a bulge 101 which is less pronounced than in the first embodiment. The side flaps 30, 31 are the same shape.

The tuck-in panel 22 is divided into a main part 102 and a tuck-in part 103 by a fold line 104. The fold line 104 is curved outwardly and terminates at each end at the end of a slit 105 which extends to the periphery of the flap 22 in a direction away from the wall panels 13, 14, 15, 16. Each slit 105 forms an angled shoulder on the main part 102 and the tuck-in part 103. Each slit 105 intersects the periphery of the flap 22 at a point where the flap 22 is narrowed outwardly. The flap 28 is the same as the flap 22.

There is no central portion of perforations 37 in the second embodiment but instead the cut line 36 comprises four long cuts.

The edge 56 of the first insert side panel 52 which is adjacent the lower side flap 30 extends at an angle to the fold line 55 such that when the insert 12 is folded about the fold line 54 the edge 56 is parallel with the cut line 38 and the side panel 13. The edge 56 is longer in the second embodiment and terminates in a projection 106, there being a further projection 107 at the level of the cut 58.

When the carton is erected, the projections 106 and 107 ensure that the first insert side panel 52 is held against the wall panel 13 frictionally and does not remain folded inwards when the carton is erected from the sleeve formed.

Fig. 5 shows the top end of the carton with the flap 22 tucked in. The bulged part 101 of the side flaps 24, 25 lies through the slits 105 so that the tuck-in part 103 is retained. The engagement between the edge 100 of the side flaps 24, 25 adjacent the bulged part 101 with the portion of the flap 22 at the inner end of the slits 105 acts to retain the main part 102 of the flap 22 and urge

the main part 102 into a flat condition. The folding of the tuck-in part 103 about the curved fold line 104 also acts to flatten the main part 102 of the flap 22.

The main tuck-in flap 28 forms a tuck-in closure in the same way and the carton can thus be stood on either end and will be stable due to the flat base. The carton is also provided with a neat geometrical appearance.

CLAIMS

1. A carton having a tuck-in end comprising a main flap and at least one side flap, the main flap being connected to the remainder of the carton through a hinge line and including a line of weakness dividing the main flap into a tuck-in tongue and a main part, the or each side flap being arranged to engage a portion of the main flap which is spaced from the hinge line when the tuck-in end of the carton is closed, to inhibit the or each said portion from moving towards the hinge line.
2. A carton as claimed in claim 1, wherein the or each side flap urges the or each said portion away from the hinge line.
3. A carton as claimed in claim 1 or claim 2, wherein the or each portion is in the region of the end of the line of weakness in the main flap.
4. A carton as claimed in any of claims 1, 2 or 3, wherein the tongue includes a shoulder part at or adjacent one or both ends of the line of weakness.
5. A carton as claimed in claim 4, wherein the shoulder part lies at an obtuse angle to the longitudinal axis of the line of weakness.

6. A carton as claimed in claim 5, wherein the shoulder part lies at an angle of more than  $135^{\circ}$  to the longitudinal axis of the line of weakness.
7. A carton as claimed in claim 6, wherein the shoulder part lies at an angle of more than  $150^{\circ}$  to the longitudinal axis of the line of weakness.
8. A carton as claimed in any preceding claim, wherein there is a slit from one or each end of the line of weakness to the periphery of the main flap.
9. A carton as claimed in claim 8 when dependent on any of claims 4 to 7, wherein the or each slit forms the shoulder part.
10. A carton as claimed in any preceding claim, wherein an edge of the or each side flap may be arranged to engage the or each portion.
11. A carton as claimed in claim 10, wherein the edge of the or each side flap is angled away from the line of weakness.
12. A carton as claimed in claim 11, wherein the edge of the or each side flap includes a bulged portion which is

arranged to lie behind the shoulder part when the carton is closed.

13. A carton as claimed in any preceding claim, wherein the said line of weakness in the main flap is a fold line.

14. A carton as claimed in claim 13, wherein the said line of weakness in the main flap is a curved fold line.

15. A carton including a first flap or panel which is connected through a fold line to a second flap or panel, the fold line being curved.

16. A carton as claimed in claim 15, wherein the second flap or panel is intended to be flat in the erect carton.

17. A carton as claimed in claim 16, wherein the second flap or panel forms the base of the carton.

18. A carton as claimed in claimed in claim 15, 16 or 17, wherein the second flap or panel is an end closure flap or panel.

19. A carton as claimed in claimed in claim 18, wherein the second flap or panel is a main part of a main flap of a tuck-in closure, the main part being connected through

a line of weakness to a tuck-in tongue of the main flap.

20. A carton as claimed in claim 19, wherein the said line of weakness constitutes the said curved fold line.

21. A carton as claimed in any of claims 15 to 20, wherein the carton is a flip top carton.

22. A carton as claimed in claim 21, wherein the carton is formed from a single blank.

23. A flip top carton formed from a single blank, the carton comprising a plurality of carton panels and an insert connected to the lower edge of the front panel of the carton.

24. A carton as claimed in claim 23, wherein the carton includes a tuck-in closure flap arrangement to close the lower end thereof.

25. A flip top carton formed from a single blank, the carton comprising a plurality of carton panels and an insert connected thereto, the insert including a fold line which is arranged to lie under a fold line between two carton panels when the carton is in flattened sleeve form, the said insert fold line being weakened and including a plurality of perforations.

26. A carton substantially as described herein with reference to Figs. 1, 2 and 3 or Figs. 4 and 5 of the accompanying drawings.



Relevant Technical fields

- (i) UK Cl (Edition K ) B8P (PB1, PC1C, PC1X, PK3, PL4)  
(ii) Int CL (Edition 5 ) B65D 5/02, 5/66, 85/10

Search Examiner

S R SMITH

Databases (see over)

- (i) UK Patent Office  
(ii)

Date of Search

16 JUNE 1992

Documents considered relevant following a search in respect of claims

1-22

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1277653 (METAL BOX) see lines 33 to 44 of page 2, Figures 1, 2 and 4	1,2,3,8, 10,11,13
X	GB 1023071 (AUSTIN PACKAGING) see lines 125 to 130 of page 2, Figure 1	1,2,3,8, 10,11,13
X	GB 980885 (TAYLOWE) see lines 3 to 8 of page 2, Figure 1	1,2,3,8, 10,11,13
X	GB 447156 (HARVEY) see lines 17 to 63 of page 2, Figure 1 and 3	1,2,3,8, 10,11,13
X	GB 289127 (SEXTON) see line 98 of page 2 to line 61 of page 3	1,2,3,4, 5,6,7,8, 9,10,11, 12,13
X	EP 0318750 A1 (GI.BI.EFFE) see line 34 of Column 3 to line 26 of Column 4	1,2,3,8, 10,11,13

Category	Identity of document and relevant passages	Relevant to claim(s)

### Categories of documents

**X:** Document indicating lack of novelty or of inventive step.

**Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.

**A:** Document indicating technological background and/or state of the art.

**P:** Document published on or after the declared priority date but before the filing date of the present application.

**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.

**&:** Member of the same patent family, corresponding document.

**Databases:** The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).